

REMARKS

Claims 1 and 3-6 are pending in this application. Claim 1 is independent.

Applicants thank the Examiner for the courtesies extended to their representative during the personal interview on May 9, 2006. Applicants thank the Examiner for the indication during the personal interview that the pending claims appear to be patentable over the cited prior art.

The present invention relates to an aromatic polycarbonate resin product, having excellent moldability and physical properties, for producing optical disc substrates. Specification at page 1, lines 10-12;

The polycarbonate resin composition of the present invention is produced by combining 0.015 to 0.05 parts of stearic acid monoglyceride with 100 parts of an aromatic polycarbonate resin, then adding water having an electric conductivity at 25C of 1 μ S/cm or less to the resin such that the final water content of the resin is controlled to fall within the range of 0.05 to 0.2 mass% (i.e. 500-2000 ppm). The water added resin is then melt extruded, cooled and cut to form pellets. The resin has a viscosity average molecular weight of 10,000 to 20,000.

To release molded optical disc substrates from molds smoothly, and to attain good reliability as a recording medium, the present inventors found that the amount of stearic acid monoglyceride in the resin composition should be controlled within a certain allowable range. Specification at page 3, line 27 to page 4, line 5.

Furthermore, the present inventors have found that denaturing of the stearic acid monoglyceride, which decreases the releasing-ability of optical disc substrates in molding, is effectively prevented by adding a specific amount of water to the aromatic polycarbonate resin. Specification at page 4, lines 13-23.

Claims 1 and 3-6 are rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,463,013 ("Tokuda").

Tokuda discloses a modified aromatic polycarbonate resin made by interface polymerization between an aqueous NaOH phase and an organic methylene chloride phase. After the polymerization, the organic phase was separated from the aqueous phase. The organic phase was then repeatedly washed with water and neutralized with hydrochloric acid. The organic phase was then pulverized. Methylene chloride was evaporated to give the modified polycarbonate. Stearic acid monoglyceride was then added to the polycarbonate and the mixture was melted to prepare pellets. Tokuda at title; column 19, Example 8.

However, Tokuda is silent about the water content of the mixture of polycarbonate and stearic acid monoglyceride. Tokuda's conventional polymerization technique, in which pulverized polycarbonate is dried to remove methylene chloride, typically reduces the amount of water in the polycarbonate to the range of 200 to 400 ppm. See, e.g., specification at page 26, Table 1-1. Tokuda fails to disclose or suggest the independent Claim 1 limitation of "the water content of the resin being controlled so as to fall within the range of 0.05 to 0.2 mass%" (i.e., 500 to 2000 ppm).

Thus, the rejection under 35 U.S.C. § 102(b) over Tokuda should be withdrawn.

Any *prima facie* case of obviousness based on Tokuda is rebutted by the significant reduction in denaturing of stearic acid monoglyceride and significant improvement in releasing ability that is achieved by the present invention when the water content of the resin is controlled to be in the range of 500 to 2000 ppm. This is demonstrated in the specification at Tables 1-1 and Table 1-2, reproduced below.

Table 1-1

	Composition of raw material			Water content of PC before addition of water	Water added to PC
	Polycarbonate (PC)		SM content		
	Type	Mol. wt.	ppm	ppm	ppm
Ex. 1	PC-A	14,200	280	400	1,000
Ex. 2	PC-B	14,200	280	400	1,000
Ex. 3	PC-C	14,200	280	400	1,000
Ex. 4	PC-A	14,000	280	400	800
Comp. Ex. 1	PC-A	14,200	280	400	—
Comp. Ex. 2	PC-B	14,200	280	400	—
Comp. Ex. 3	PC-C	14,200	280	400	—

Table 1-2

	Amount of Stearic Monoglyceride remaining in pellets		Molding-ability		Resistance against heat moisture		
	S.M. ppm	Products deriving from denatured S.M. ppm	Releasing ability	yield	Mol. wt. before treatment (Mv)	Mol. wt. after treatment (Mv)	Δ Mv
Ex. 1	250	0	0	99	14,200	14,200	0
Ex. 2	210	0	0	97	14,200	14,100	100
Ex. 3	220	0	0	98	14,200	14,200	0
Ex. 4	220	trace	0	98	14,000	13,900	100
Comp. Ex. 1	40	140	X	84	14,200	14,000	200
Comp. Ex. 2	50	110	X	93	14,200	14,000	200
Comp. Ex. 3	30	120	X	96	14,200	13,900	300

Examples 1-4, which have a water content in the range of 500 to 2000 ppm, exhibit a significant reduction in denaturing of stearic acid monoglyceride and a significant improvement in releasing ability when compared to Comparative Examples 1-3, which have a water content of only 400 ppm. Tokuda is silent about the improved results achieved by the present invention by controlling the water content of the resin to 500 to 2000 ppm. Thus, any *prima facie* case of obviousness based on Tokuda is rebutted.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

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